IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method of determining total left ventricular (LV) interior volume during a cardiac cycle from a cardiac cine series, said method comprising the acts of:

delineating endocardial and epicardial contours of a left ventricle in all slices of said cine series at end-diastole (ED),

calculating a total ED intensity value ($I_{T,ED}$) inside at least one of the endocardial contours at the ED,

applying the endocardial contours delineated at the ED to all phases of the cardiac cycle, and

calculating the total LV interior volume based on intensity values for each of the phases inside the endocardial contours delineated at the ED and applied to all the phases, and

~~compensating for myocardium enclosed in the endocardial~~

~~contours delineated at the ED during subsequent phases of the cardiac cycle~~ the total ED intensity value ($I_{T,ED}$).

2.(Previously Presented) The method according to claim 1, further comprising the act of calculating a mean intensity for myocardium and blood voxels at the ED based on the delineated endocardial and epicardial contours.

3.(Currently Amended) The method according to claim 2, further comprising using the mean intensities for ~~the~~ compensating ~~act~~ myocardium enclosed in the endocardial contours delineated at ED during subsequent phases of the cardiac cycle.

4.(Currently Amended) The method according to ~~claim 3~~ claim 1, wherein the total LV interior volume (V_{LV}) is calculated as

$$V_{LV} = \sum_{i=1}^{n} V_{ED,i} \frac{I_{T,i}}{I_{T,ED}} \quad , \text{ wherein}$$

n is ~~the~~ a total number of slices comprising the LV total interior volume,

$V_{ED,i}$ is ~~the~~ a calculated interior volume of slice number i of

the LV at the end-diastole of the LV,

$I_{T,i}$ is ~~the~~ a detected intensity of slice i within ~~the~~ an endocardial ~~delimitation~~ contour~~,~~ ~~and~~

~~$I_{T,ED}$ is the total intensity at the ED~~.

5.(Previously Amended) The method according to claim 1, wherein the cine series is a short-axis study of the heart consisting of multiple slices covering at least the left ventricle and multiple phases within the cardiac cycle.

6.(Previously Presented) The method according to claim 1, further comprising the act of determining the LV volume from cine sequences acquired at different stress levels, whereby the temporal behaviour of the heart as a function of increasing stress is determined.

7.(Previously Presented) The method according to claim 1, wherein said cine series is captured previously to said method on a device for imaging inside parts of a mammal body.

8.(Original) The method according to claim 7, wherein said device for imaging inside parts of a mammal body is a Magnetic Resonance (MR), Computer Tomography (CT), Nuclear Medicine (NM) or Ultrasound (US) device.

9.(Original) The method according to claim 8, wherein an MRI study comprises Steady State Free Precession (SSFP) images.

10.(Previously Presented) The method according to claim 1, further comprising the act of compensating motion of the heart.

11.(Currently Amended) A computer-readable medium having embodied thereon a computer program for processing by a computer for calculating total left ventricular (LV) volume during a cardiac cycle from a cine series, the computer program comprising:

a first code segment for delineating endocardial and epicardial contours of a left ventricle in all slices of said cine series at end-diastole (ED) and calculating a total ED intensity value ($I_{T,ED}$) inside at least one of the endocardial contours at the ED,

a second code segment for applying the endocardial contours delineated at ED to all phases of the cardiac cycle, and

a third code segment for calculating the total LV volume based on intensity values for each of the phases inside the endocardial contours delineated at the ED ~~including compensating for myocardium enclosed in the endocardial contours delineated at the ED during subsequent phases of the cardiac cycle~~ and applied to all the phases, and the total ED intensity value ($I_{T,ED}$).

12.(Original) The computer-readable medium according to claim 11, wherein said first code segment automatically delineates the endocardial and epicardial contours.

13.(Previously Presented) The method of claim 1, wherein the compensating act includes deleting contribution of the myocardium enclosed in the endocardial contours.

14.(Previously Presented) The computer-readable medium of claim 11, wherein contribution of the myocardium enclosed in the endocardial contours is removed.

15.(New) The computer-readable medium of claim 11, wherein said third code segment calculates the total LV volume by:

dividing a first slice intensity value ($I_{T,i}$) associated with a first slice by the total ED intensity value ($I_{T,ED}$) to form a first fraction intensity value;

multiplying the first fraction intensity value with a calculated interior volume of the first slice of the LV at the ED to form a first slice volume of slice volumes; and

summing the slice volumes to form the total LV interior volume.

16.(New) A method of determining total left ventricular (LV) interior volume during a phase of a cardiac cycle from a cardiac cine series, said method comprising the acts of:

delineating endocardial contours of a left ventricle in all slices of said cine series at end-diastole (ED),

applying the endocardial contours delineated at the ED to image slices of the phase of the cardiac cycle, and

calculating the total LV interior volume of the phase based on

phase intensity values inside the endocardial contours delineated at the ED and applied to the image slices of the phase, and a total ED intensity value ($I_{T,ED}$) inside at least one of the endocardial contours at the ED.

17. (New) The method of claim 16, wherein the calculating act includes the acts of:

dividing a first slice intensity value ($I_{T,i}$) of the phase intensity values associated with a first slice by the total ED intensity value ($I_{T,ED}$) to form a first fraction intensity value;

multiplying the first fraction intensity value with a calculated interior volume of the first slice of the LV at the ED to form a first slice volume of slice volumes; and

summing the slice volumes to form the total LV interior volume.

18. (New) The method of claim 16, further comprising the acts of:

manually delineating an endocardial contour on an image of a slice to form a manual contour;

calculating an image volume based on a signal intensity due to blood contained in the image; and

forcing the image volume to coincide with the manual contour using a calculated factor; and

applying the calculated factor to intensity sums of further images of the slice.

19.(New) The method of claim 1, further comprising the acts of:

manually delineating an endocardial contour on an image of a slice to form a manual contour;

calculating an image volume based on a signal intensity due to blood contained in the image; and

forcing the image volume to coincide with the manual contour using a calculated factor; and

applying the calculated factor to intensity sums of further images of the slice.

20.(New) The computer-readable medium of claim 11, further comprising:

a fourth code segment for calculating an image volume based on a signal intensity due to blood contained in an image surrounded by a manual contour formed by manually delineating an endocardial contour on the image;

a fifth code segment for forcing the image volume to coincide with the manual contour using a calculated factor; and

a sixth code segment for applying the calculated factor to intensity sums of further images of the slice.